REGION 6 EXECUTIVE SUMMARY

TOPIC: EPA Region 6 *Naegleria fowleri* update in Louisiana

DATE: February 27, 2014

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PURPOSE/ACTION NEEDED: Status update on regional *Naegleria fowleri* activities

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BACKGROUND:

Since 2011, there have been three fatalities in Louisiana involving the amoeba *Naegleria fowleri*. Two of these fatalities involved public drinking water systems located in DeSoto Parish (DeSoto Parish Waterworks District No. 1) and St. Barnard Parish (St. Bernard Water System) where water was forced into the nasal cavity. In response to the deaths and positive follow up samples, Louisiana Department of Health and Hospitals (LDHH) issued an emergency rule requiring that water systems in the state maintain a higher residual disinfectant level and increase their number of sampling sites by 25 percent. Most drinking water systems in Louisiana were required to meet this new higher standard by February 1, 2014. In addition, Louisiana water systems that utilize chloramine disinfection were required to submit a nitrification control plan by March 1, 2014.

CURRENT STATUS:

At the present time, follow up distribution system water samples for *Naegleria fowleri* at the DeSoto Parish Waterworks District No. 1 and St. Bernard Water System have come back negative. LDHH is planning additional sampling and testing in these parishes later in the year as temperatures increase, making water more sustaining for the ameba. In addition, Louisiana has convened a *Naegleria fowleri* Scientific Advisory Working Group comprised of staff members from LDHH , Centers for Disease Control and Prevention, EPA (Office of Research and Development and Region 6), Australian water experts, and engineering consultants from Jacobs Engineering and Corona Environmental.

EPA Region 6 staff is actively participating in the LDHH *Naegleria fowleri* Scientific Advisory Working Group, Naegleria Laboratory Testing Subgroup, and will participate in the EPA *Naegleria fowleri* and Drinking Water National Task Force.

EPA Region 6 Area Wide Optimization team members are also arranging a distribution system field event exercise near Shreveport, Louisiana, to provide LDHH engineering staff experience in using a hydrant adapter and calculated flush times for distribution system sampling events. Additional guidance will be provided on the use of pressure data, heterotrophic plate counts, and mapping tools.

ENVIRONMENTAL/PUBLIC HEALTH CONCERNS:

Exposure to *Naegleria fowleri* typically occurs when people go swimming or diving in warm freshwater lakes and rivers. In very rare instances, *Naegleria fowleri* infections may also occur when contaminated water from other sources (such as inadequately chlorinated swimming pool water or heated tap water less than 116.6 degrees Fahrenheit) enters the nose, when people submerge their heads or when people irrigate their sinuses with devices such as a neti pot. People cannot be infected with *Naegleria fowleri* by oral ingestion of drinking water.

TECHNICAL CONCERNS:

There are ongoing discussions regarding sample collection conditions, detection methodologies, and incubation temperatures for *Naegleria fowleri.* The following questions have been raised:

1. When should *Naegleria fowleri* samples be collected? (At warm or cold temperatures)
2. What laboratory detection methods should be utilized (molecular methods, culture methods, flagellation, etc.)

3. What is the ideal incubation temperature for *Naegleria fowleri?* (42 or 44 degrees Celsius)

REGULATORY/LEGAL REQUIREMENTS:

- Potential Lawsuits
  - St. Bernard Parish has been sued by the parents of the deceased on November 3, 2013 in federal court in New Orleans.
  - The defendant (St. Bernard Parish) is accused of failing to take prudent and reasonable measures, including properly and adequately chlorinating the water to prevent *Naegleria fowleri* from living in the water, inspecting the water for dangerous organisms, monitoring the water for dangerous organisms, and warning the public concerning the presence of *Naegleria fowleri* in the water supply.
- Distribution System Monitoring
  - Total Coliform Rule (TCR) monitoring was not being conducted throughout the distribution system, according to the State approved TCR monitoring plan. Water system operators were going back to "good" sites in the distribution system three times each month to collect the proper number of TCR samples each month.
  - Similarly, disinfectant residual samples were collected from the good sites and were not reflecting zero chlorine residuals in compromised sections of the distribution system.
  - Investigative monitoring found large portions of the distribution system with no detectable chlorine residual (likely due to nitrification), and in many of these portions of the distribution system, *Naegleria fowleri* was detected in drinking water samples.

COMMUNITY CONCERNS:

- Safety of drinking water in Louisiana as temperatures begin to rise
- Impact from new minimum chlorination levels